



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 39560.4-2021

**Determination of certain substances in electrical and electronic
products - Part 4: Mercury in polymers, metals and electronics
by CV-AAS, CV-AFS, ICP-OES and ICP-MS**

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Foreword

Currently, GB/T 39560 Determination of Certain Substances in Electrical and Electronic Products can be divided into the following parts:

- Part 1: Introduction and Overview;
- Part 2: Disassembly, Disjointment and Mechanical Sample Preparation;
- Part 3-1: Screening Lead, Mercury, Cadmium, Total Chromium and Total Bromine by X-Ray Fluorescence Spectrometry;
- Part 4: Mercury in Polymers, Metals and Electronics by CV-AAS, CV-AFS, ICP-OES and ICP-MS;
- Part 5: Cadmium, Lead and Chromium in Polymers and Electronics and Cadmium and Lead in Metals by AAS, AFS, ICP-OES and ICP-MS;
- Part 6: Polybrominated Biphenyls and Polybrominated Diphenyl Ethers in Polymers by Gas Chromatography-Mass Spectrometry (GC-MS);
- Part 7-1: Hexavalent Chromium - Presence of Hexavalent Chromium [Cr (VI)] in Colorless and Colored Corrosion-Protected Coatings on Metals by the Colorimetric

Method;

--- Part 7-2: Hexavalent Chrome - Determination of Hexavalent Chrome [Cr (VI)] in

Polymers and Electronics by the Colorimetric Method;

--- Part 8: Phthalates in Polymers by Gas Chromatography-Mass Spectrometry (GC-MS),
Gas Chromatography-Mass Spectrometry Using a Pyrolyzer/Thermal desorption
Accessory (Py/TD-GC-MS).

This Part is Part 4 of GB/T 39560.

This Part was drafted as per the rules specified in GB/T 1.1-2009.

This Part used the translation method to equivalently adopt IEC 62321-4:2013
Determination

of Certain Substances in Electrotechnical Products - Part 4: Mercury in Polymers, Metals
and

Electronics by CV-AAS, CV-AFS, ICP-OES and ICP-MS.

This Part adopts the amendments of IEC 62321-4:2013/AMD1:2017, and the clauses
involved

in these amendments have been marked by vertical double lines (||) in their outer margins.

The Chinese documents that have a consistent correspondence with the international
documents

normatively cited in this Part are as follows:

--- GB/T 39560.1-2020 Determination of Certain Substances in Electrical and Electronic
Products - Part 1: Introduction and Overview (IEC 62321-1:2013, IDT);

--- GB/T 39560.2-2020 Determination of Certain Substances in Electrical and Electronic
Products - Part 2: Disassembly, Disjointment and Mechanical Sample Preparation (IEC
62321-2:2013, IDT);

--- GB/T 39560.301-2020 Determination of Certain Substances in Electrical and Electronic
Products - Part 3-1: Screening Lead, Mercury, Cadmium, Total Chromium and Total
Bromine by X-Ray Fluorescence Spectrometry (IEC 62321-3-1:2013, IDT);

--- GB/T 6682-2008 Water for Analytical Laboratory Use - Specification and Test Methods
(ISO 3696:1987, MOD).

This Part made the following editorial modification:

--- In order to be consistent with the existing Chinese standards, change the standard name into

Determination of Certain Substances in Electrical and Electronic Products - Part 4: Mercury in Polymers, Metals and Electronics by CV-AAS, CV-AFS, ICP-OES and ICP-MS.

This Part was proposed by and under the jurisdiction of National Technical Committee on Environment for Electrical and Electronic Products and Systems of Standardization Administration of China (SAC/TC 297).

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Determination of Certain Substances in Electrical and

Electronic Products - Part 4: Mercury in Polymers, Metals

and Electronics by CV-AAS, CV-AFS, ICP-OES and ICP-MS

WARNING - Persons using this Part should be familiar with normal laboratory practice. This Part does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user to establish appropriate safety and health practices and to ensure compliance with any national regulatory conditions.

1 Scope

This Part of GB/T 39560 describes test methods for mercury in polymers, metals and electronics

by CV-AAS, CV-AFS, ICP-OES and ICP-MS.

This Part specifies the determination of the levels of mercury (Hg) contained in electrotechnical

products. These materials are polymers, metals and electronics (e.g., printed wiring boards, fluorescent lamps, mercury switches). Batteries containing Hg should be handled as described

in [1]. The interlaboratory study has only evaluated these test methods for plastics, other matrices

were not covered.

This Part refers to the sample as the object to be processed and measured. What the sample is

or how to get to the sample is defined by the entity carrying out the tests. Further guidance on

obtaining representative samples from finished electronic products to be tested for levels of regulated substances may be found in IEC 62321-2. It is noted that the selection and/or determination of the sample may affect the interpretation of the test results.

This Part describes the use of four methods, namely CV-AAS (cold vapor atomic absorption spectrometry), CV-AFS (cold vapor atomic fluorescence spectrometry) ICP-OES (inductively

coupled plasma optical emission spectrometry), and ICP-MS (inductively coupled plasma mass

spectrometry) as well as several procedures for preparing the sample solution from which the

most appropriate method of analysis can be selected by experts.